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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,456	02/08/2002	David L. Dickerson	MI22-1943	9958
21567	7590	06/29/2004	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			MAI, ANH D	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No. 10/071,456	Applicant(s) DICKERSON ET AL.	
	Examin r Anh D. Mai	Art Unit 2814	

-- Th MAILING DATE of this communication app ars on the cover sh t with th correspondenc address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 69-71 and 73-77 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 69-71 and 73-77 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

1. Amendment filed June 07, 2004 has been entered. Claim 72 has been canceled. Claim 69 has been amended. Claims 76 and 77 have been added. Claims 69-71 and 73-77 are pending.

Response to Amendment

2. The amendment filed June 07, 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: “an entirety of the insulative material comprising the same stoichiometry” (as recited in amended claim 69); “trench comprises sidewall extending substantially 90° relative the upper surfaces of the semiconductor substrate” (as recited in new claim 76) and “the trench comprises sidewalls connected by a bottom wall, and wherein the sidewalls form right angles with the bottom wall” (as recited in new claim 77).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 69-71 and 73-77 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

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was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There does not appear to be a written description of the claim limitation “an entirety of the insulative material comprising the same stoichiometry” or “trench comprises sidewall extending substantially 90° relative the upper surfaces of the semiconductor substrate” or “wherein the sidewalls form right angles with the bottom wall” in the application as filed.

Moreover, according to the specification, the insulative material filling the trench includes a thermally grown oxide liner and a CVD oxide.

It is well known that the stoichiometries of the thermally grown oxide liner and of the CVD oxide are different.

How can the **entirety of the insulative material** comprising the same stoichiometry since that insulative material has two structurally different materials ?

With respect to substantially 90° vertical sidewalls and form right angles with the bottom of the trench, it appears that the Applicant have drawn these terms from the drawings. However, the drawings are not drawn to scale and the actual formation of the trench are clearly discloses by S. Wolf et al., Silicon Processing for the VLSI Era, Vol. 2, Lattice Press 1990, pp. 51-54.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 69-71 and 73-77 are rejected under 35 U.S.C. 102(e) as being anticipated by Kondo (U.S. Patent No. 6,010,947).

With respect to claim 69, as best understood by the examiner, Kondo teaches a semiconductor construction as claimed including:

a semiconductor substrate (91) having a trench extending partially therein and upper surfaces adjacent the trench;

an oxide layer (92) formed over the upper surfaces of the semiconductor substrate (91) and having an uppermost surface;

an insulative material (95) filling the trench and having a portion outward of the trench and semiconductor substrate (91), the portion comprising an outermost upper surface elevationally above the uppermost surface of the oxide layer (92) and sidewalls connecting the outermost upper surface with the oxide layer (92), the sidewalls comprising first and second curved segments, the first curved segment extending from the outermost upper surface and comprising a first apex directed away from the semiconductor substrate (91), and the second curved segment extending from the first curved segment to the oxide layer (92) and comprising a second apex directed toward the semiconductor substrate (91), the second apex being elevationally at or above the upper most surface of the oxide layer (92), an entirety of the insulative material (95) comprising the same stoichiometry; and

a polysilicon layer (96) formed against the uppermost surface of the oxide layer (92) and against the portion of the insulative material (95). (See Fig. 12B).

With respect to claim 70, the insulative material (95) of Kondo comprises oxide.

With respect to claim 71, the insulative material (95) of Kondo comprises a first insulative material (94) partially filling the trench and a second insulative material (95) formed over the first insulative material (94).

With respect to claim 73, the trench of Kondo comprises sidewalls connected by a bottom wall, and wherein the first curved segments of the portion are elevationally above and between the sidewalls of the trench.

With respect to claim 74, the trench of Kondo comprises sidewalls connected by a bottom wall, and the first curved segments of the portion are directly over the bottom wall of the trench.

With respect to claim 75, the trench of Kondo comprises sidewalls intersecting the upper surfaces of the semiconductor substrate (91), the intersection being positioned elevationally directly below the second curved segment of the portion of the insulative material (95).

With respect to claim 76, as best understood by the examiner, the trench of Kondo comprises sidewalls extending substantially 90° relative the upper surfaces of the semiconductor substrate.

With respect to claim 77, as best understood by the examiner, the trench of Kondo comprises sidewalls connected by a bottom wall, and wherein the sidewalls form right angles with the bottom wall.

Since the sidewalls of Kondo is formed substantially vertical, therefore, the sidewalls of Kondo is formed a substantially right angles with the bottom wall.

Response to Arguments

5. Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh D. Mai whose telephone number is (571) 272-1710. The examiner can normally be reached on 9:00AM-5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



A.M
June 25, 2004